Lightning Safety

Fort Detrick Installation Safety Management Office

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Lightning Safety Websites

This presentation was compiled by First Army from information provided on the following websites.

- 45th Weather Squadron Lightning Safety Website: http://www.patrick.af.mil/45og/45ws/LightningSafety/index.htm
- NOAA Lightning Safety: http://www.lightningsafety.noaa.gov/
- CECOM Publications (Antenna Safety, Grounding, etc.) http://www.monmouth.army.mil/cecom/safety/SYSTEM/SPUB.HTM
- Kids' Lightning Information and Safety: http://www.azstarnet.com/anubis/zaphome.htm

Lightning Facts

2nd Leading Cause of Weather Deaths in the United States

Kills more than Hurricanes and Tornadoes combined!

- **Kills ~ 100 / Year**
- **Kills ~ 10% of those Struck**

Lightning Facts

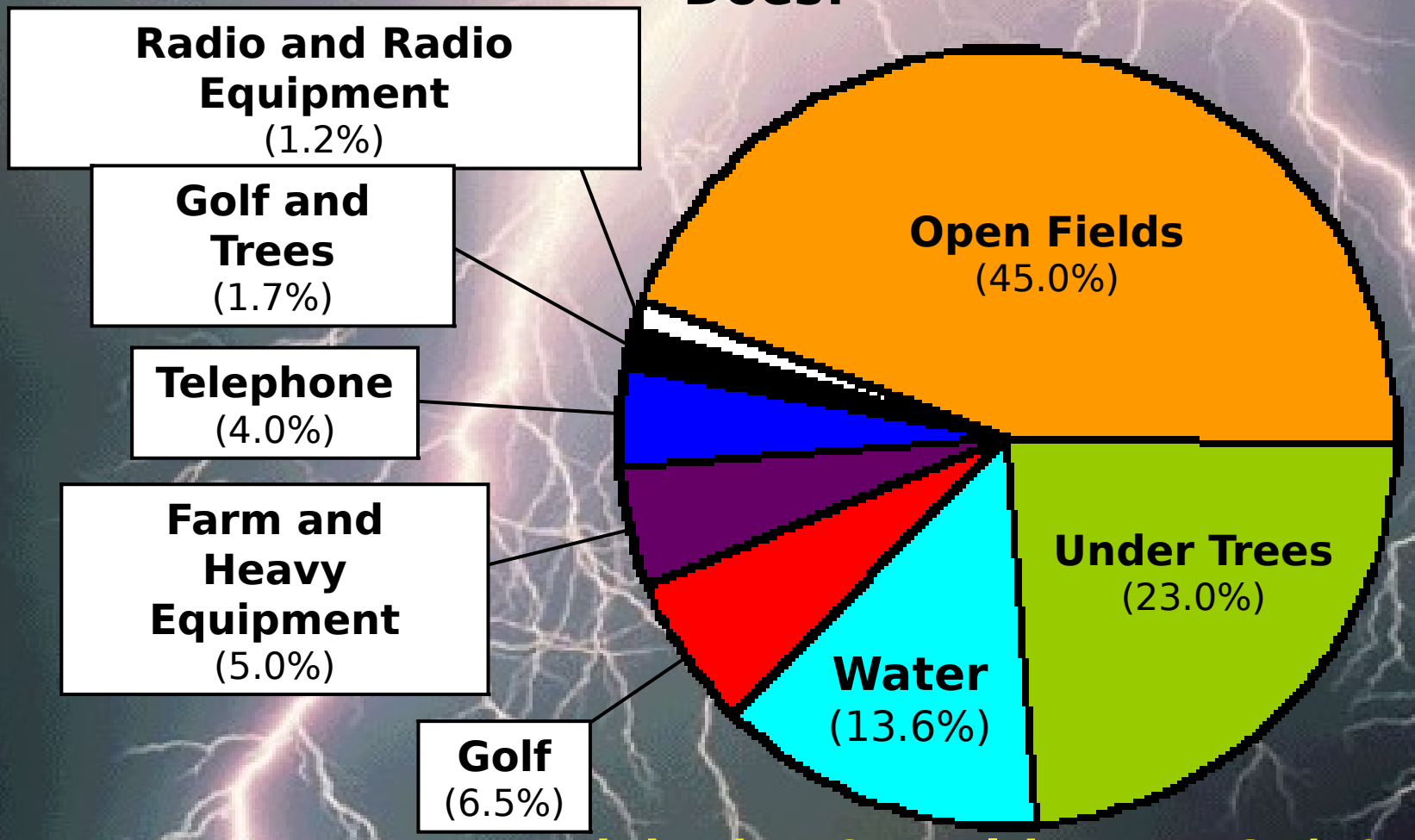
Survivors are an even greater tragedy!

- **Injures ~750 / Year**
- **~ 70% Long-Term Medical Problems**
- **~ 30% Suffer Debilitating Problems**
- **Elusive Data**
  - **40 - 70% Under-Reported**

Courtesy of National Lightning Safety Institute

Lightning Facts

When thunderstorms nearby, avoid these activities like your life depends on it -- It Does!



Lightning Casualties In U.S. (1959-2001

Lightning Safety when Outdoors

If you can see lightning or hear thunder, activate your safety plan. Resume activities only when lightning and thunder have not been observed for thirty minutes.

If you can see it (lightning), flee it; if you can hear it (thunder), clear it.

Lightning Safety

- **“30 / 30 Rule”**
- **If <u>30 Secs Or Less</u> “Flash To Bang”- Seek Shelter**

COMMON MISCONCEPTION

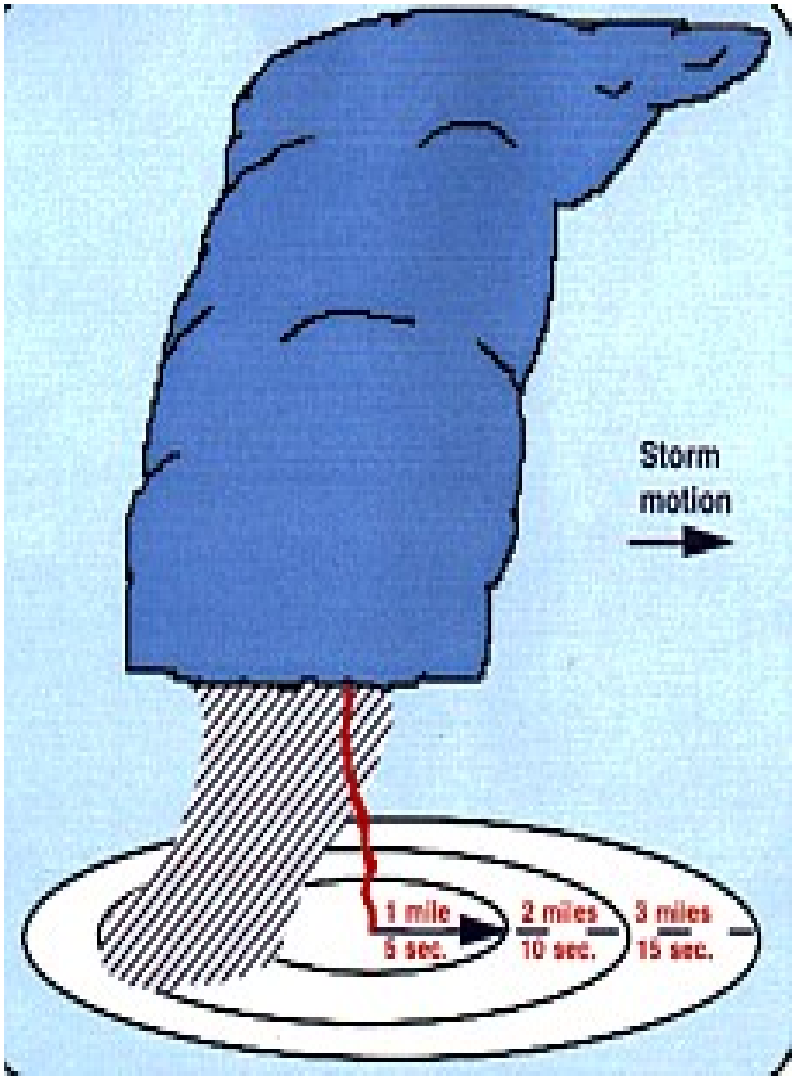
1 second = 1 mile

ACTUALLY

5 seconds = 1 mile

- **Wait <u>30 Min</u> After Last Lightning, Before Leaving Shelter**

May Seem Too Conservative--It’s NOT!



Lightning Safety

- **Important Components Of A Dispersal/Safety Plan**
  - **Designated individual responsible to monitor the weather and initiate the necessary precautions when appropriate.**
  - **Procedure identified to notify all personnel of the appropriate actions when there is a threat or risk of lightning.**
  - **Safer locations must be pre-identified along with a means to route personnel to those locations.**
  - **Establishment of an “All Clear” signal which is differentiated from the warning signal.**
  - **Periodically Review / Train / Drill Dispersal Plan**

Associated Hazards

Contrary to common belief, most lightning accidents do not come from direct lightning strikes. There are several ways lightning can cause injury.

COMMUNICATION

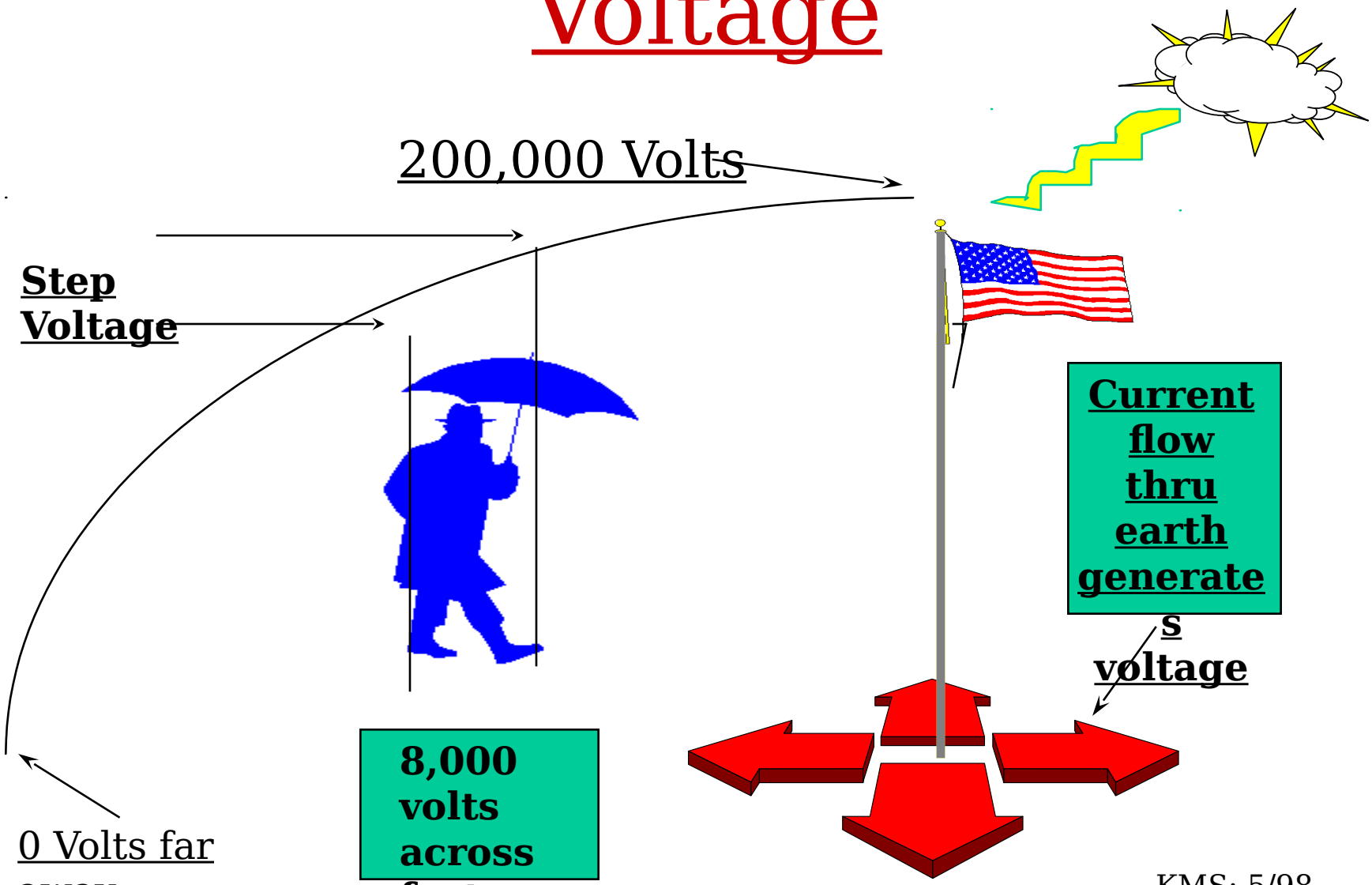
Tactical Communication

- Equipment will be grounded IAW grounding instructions contained in applicable TMs. Remember that soil type impacts the grounding.
- Keep away from antennas, masts, guy wires and all grounding and lightning protection equipment, including ground rods, during electrical storm activity. This includes vehicles with whip antennas.

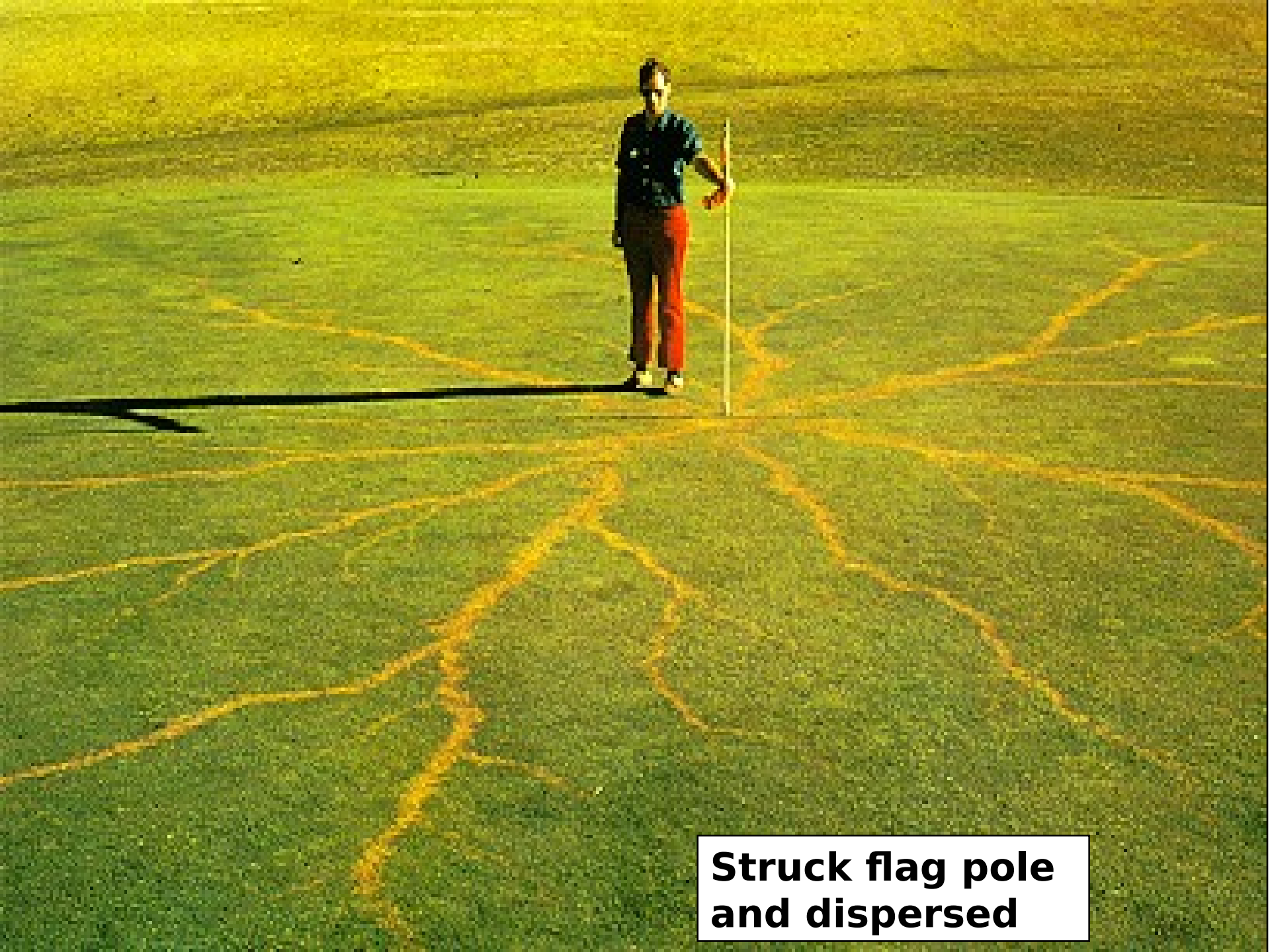
Tactical Communication

- If mission permits, disconnect the signal inputs before the storm. Do not attempt this during the storm, even if lightning is not nearby!
- Restrict the use of telephones, computers and other electrical devices. Lightning could follow the wire. Most lightning injuries occur from using phones during electrical storms.
- Radios will not be used, nor will troops carry radios with antennas extended.

Lightning Step Voltage



KMS: 5/98


Struck flag pole
and dispersed

Tree root system

Safe Locations #1

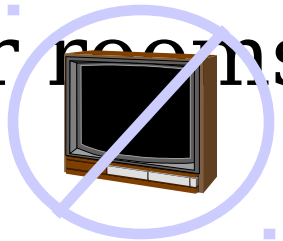
- No place is absolutely safe from lightning. Ideally, evacuation to a lightning certified or lightning protected building is the best when available; however, this will probably not be the case.

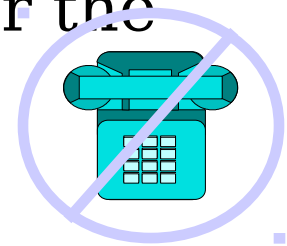
THEN

- Large enclosed structures (substantially constructed buildings).

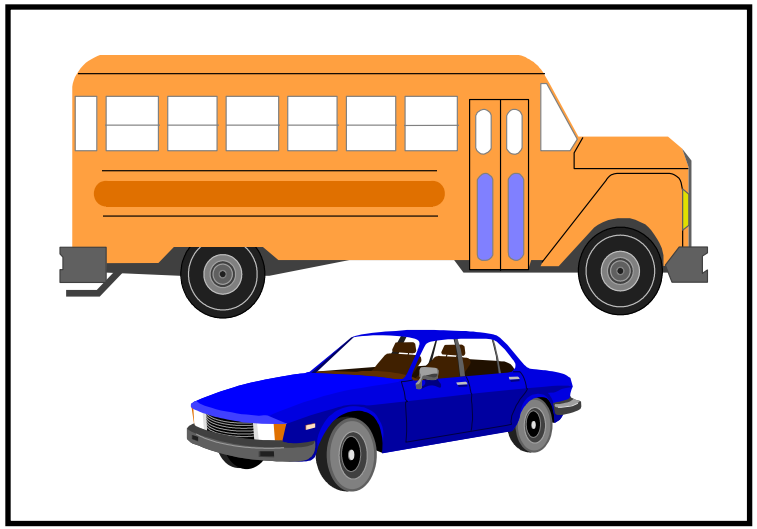
Indoor Lightning Safety

- Avoid using telephone (remember the wires).
- Avoid using water – sink, tub, etc. (plumbing)
- Unplug appliances (remember the wires).
- Inner rooms the best.





Safe Locations #2



- Fully enclosed <u>metal</u> vehicles – car, bus, etc.
  - Close windows
  - Keep hands on lap

It's not the rubber tires that make a vehicle safe – it's the metal enclosure.

<u>Not</u> Canvas Type (soft) Tops.
So, what does this say about Using 2 ½ and 5 ton vehicles?

Safe Locations #3

- Remaining Outdoors
  - Stay away from rivers, lakes, or other bodies of water. Be aware of the potential for flooding in low-lying areas.
  - Stay away from natural lightning rods/tall structures such as: towers, tall trees, telephone poles/lines, tents with metal supports, etc.
  - Take shelter under a small tree among several large ones if possible. Stay at least six feet away from the tree trunk to minimize a side strike and step voltage. NEVER stand under an isolated tree.

Safe Locations #3 (con’t)

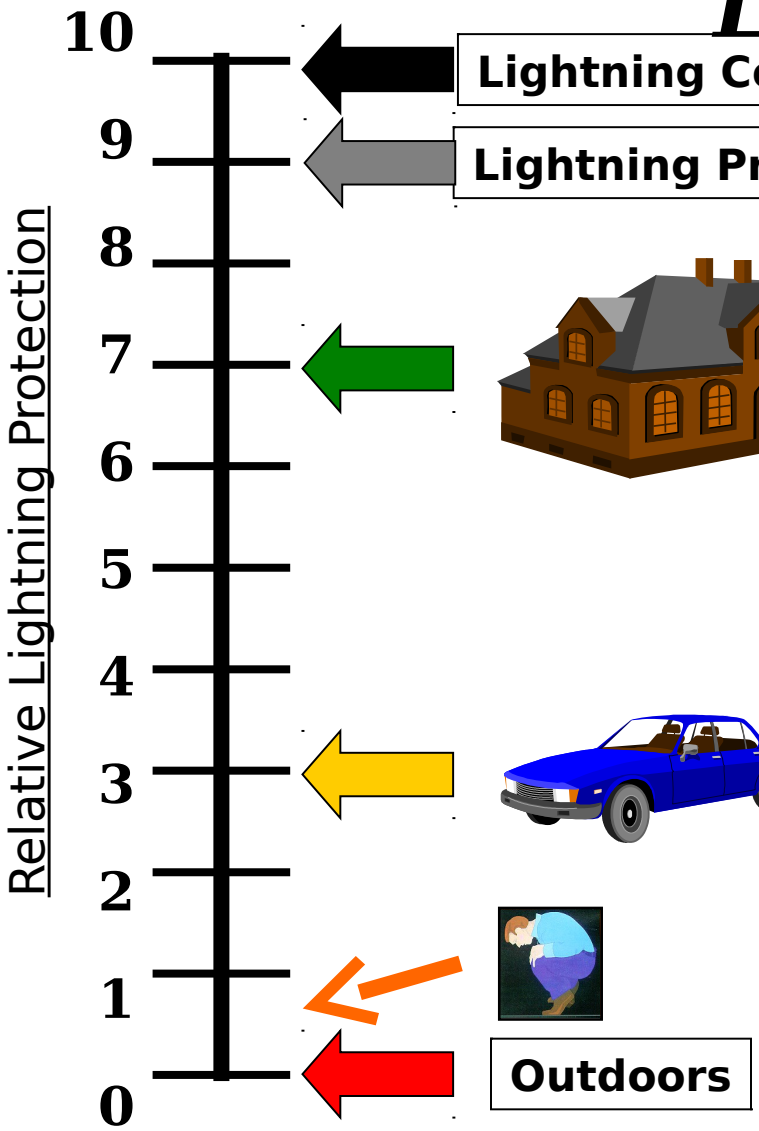
- Stay low (crouch) in a ditch or depression. Other options include a low area, ravine, or foot of a hill. **DO NOT** lie flat on ground.
- Weapons should be stacked at least 50 meters away from personnel.
- Miles gear and other metal conductors should be removed.

Lightning Safety Position (LSP)

- Assume LSP.
  - Crouch with feet as close together as possible. Have heels touch.
  - Place hands over ears.

-REMEMBER-
DO NOT LIE FLAT ON THE GROUND

Lightning Safe Locations



Seek Proper Shelter

- **Buildings Much Better Than Vehicles**
  - **Large, Fully Enclosed, Substantially Built**
- **Vehicles Offer Some Safety**
- **No Place Outside Is Safe Near A Thunderstorm**
  - **Near ≡ 6 Miles**

Lightning Safety

Without soldiers, civilians and equipment we can not support our mission – protect these valuable assets.

THINK SAFETY